



Tutuka Power Station Procedure

Environment File 7

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1. INTRODUCTION

Tutuka Power Station, within the Eskom Generation Division, has implemented an Environmental Management System (EMS) which is ISO 14001 certified for the effective management of possible environmental impacts which may incur in the delivery of its activities, services, and products.

Tutuka PS is thus aligned to the Eskom commitment within the Eskom's Corporate plan (240-56927206) and the Eskom Safety and Health, Environment and Quality (SHEQ) policy (32-727) to "implement an environmental management system in accordance with but not limited to the international organisation for standardisation, ISO 14001 requirements".

This manual describes the roadmap to the EMS of the power station and sets out the processes followed to meet the requirements of the ISO 14001 version 2015 Environmental Management System Standard.

2. SUPPORTING CLAUSES

2.1 SCOPE

2.1.1 Purpose

The purpose of this manual is to assist in:

- Sustainable Development
- Improving Environmental performance, save money, reduce waste and preserve natural resources
- Improving risk and opportunity management
- Ensuring that continual improvement is systematic
- Improving the life-cycle management approach
- Assisting in complying with legislative and other requirements to reduce reputational risks
- Improving corporate environmental responsibility
- Motivating staff to follow an integrated environmental risk management approach
- Ensuring stakeholder confidence with regard to management of environmental issues

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2.1.2 Applicability

This document is applicable to the following areas:

- Tutuka Power Station Site
- Tutuka Ash Disposal facility
- Tutuka Coal Stock Yard
- Tutuka Sewage Treatment Plant
- Thuthukani Sewage Treatment Plant

The following area is excluded:

- HV Yard
- Eskom Properties

2.2 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems.
- [2] ISO 14001 Environmental Management Systems.

2.2.2 Informative

- [1] 14EPPRARL-001 Emergency Preparedness and Response.
- [2] 13GAPRMDC/D1-001 Documents Management Procedure.
- [3] 14SHEQ PC-005 Internal Audit Procedure.
- [4] 14SHEQ PC-007 Records Management Procedure.
- [5] 14RISK IM PC-019 Incident Management, Corrective and Preventive Action Procedure.
- [6] 32-727 SHEQ Policy.
- [7] 14RISK GEN-1800 Tutuka SHEQ Statement of Intent
- [8] 14 RISK GEN-017 Tutuka PS Operational Plan

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2.3 DEFINITIONS

Definition	Explanation
Business Impact	The impact that an environmental aspect has or might have on the business.
Development	The process of progressing, advancing or bringing to maturity existing skills and competencies. This is often achieved by exposure to new and challenging tasks or environments.
Environmental Aspect	An element of activities, or products, or services that can interact with the environment. A significant environmental aspect is one that has or can have one or more significant environmental impact(s).
Environmental Impact	Any change to the environment, whether adverse or beneficial wholly or partially resulting from an organisation's environmental aspect(s).
Records	All documents that demonstrate conformance to the requirements of SANS 14001.
Stakeholder	This includes customers, investors, government, general public and employees, thus both interested and affected parties.
Training	The process of bringing a person to a desired state or standards of proficiency by instruction or practice.
<i>Definitions contained in the most recent edition of the following documents shall apply:</i>	
ISO 9000	Quality Management Systems – Fundamentals and vocabulary
ISO 14050	Environmental Management – Vocabulary

2.4 ABBREVIATIONS

Abbreviation	Explanation
A&F	Assurance and Forensic Department
CAR	Corrective Action Request
CoE	Centres of Excellence
DC	Document Controller
DEA	Department of Environmental Affairs
GM	General Manager
IDP	Individual Development Plan
MR	Management Representative
PS	Power Station
SAP EHS	Systems Application and Processes for Environment, Health & Safety
SAP QIM	Systems Application and Processes for Quality Issue Management

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SHEQ	Safety and Health, Environment and Quality
TIBPM	Tutuka Integrated Business Process Model

2.5 ROLES AND RESPONSIBILITIES

All Tutuka PS Group Managers are responsible for the implementation of this document.

Roles and responsibilities in terms of the EMS are defined in section 3.5.1 (Environmental Management System Appointments).

2.6 PROCESS FOR MONITORING

Monitoring for the implementation of this manual and the EMS throughout Tutuka PS is described within sections (3.9.1 Monitoring, Measurement, Analysis and Evaluation) and (3.9.3 Management Review).

3. RELATED/SUPPORTING DOCUMENTS

[1] Quality Management System Manual

[2] Tutuka Integrated Business Process Model

[3] Aspects and Impacts Register.

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4. CONTEXT OF THE ORGANISATION

4.1 UNDERSTANDING TUTUKA POWER STATION'S SYSTEM AND ITS CONTEXT

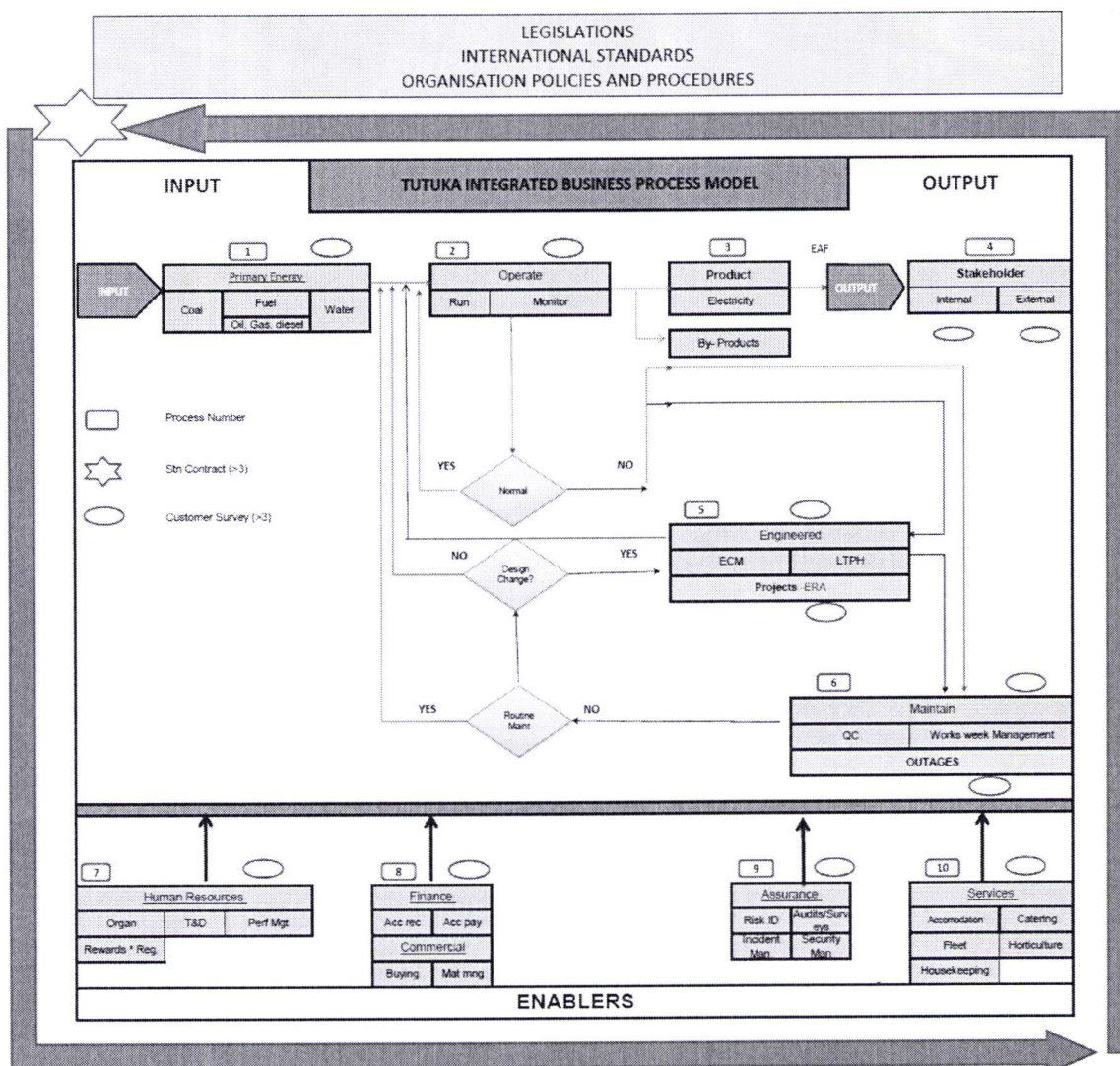
Tutuka consists of six units, installed capacity, $6 \times 609\text{MW} = 3636\text{MW}$ and is an important link in the 765kV extra-high-voltage transmission system linking Mpumalanga with the Western Cape and KwaZulu-Natal. Tutuka's first unit was put in commercial on 1 June 1985 and the last unit on 4 June 1990, and the station's operational lifespan is until 2050.

Tutuka's commitment in fulfilling Eskom's objectives are captured in the Station's 2017/18 - 2021/22 Operational Plan (14 RISK GEN-017)

The intent of the EMS for Tutuka PS is the enhancement of environmental performance, the fulfilment of compliance obligations and the achievement of environmental objectives. Tutuka PS thus choose to manage its environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability and that is integrated within the Eskom Holdings SOC Ltd business activities so that decisions are made to ensure the consideration of economic development, environmental quality, and social equity as stated in the Eskom SHEQ Policy (32-727) and the Tutuka SHEQ Statement of Intent (14RISK GEN-1800).

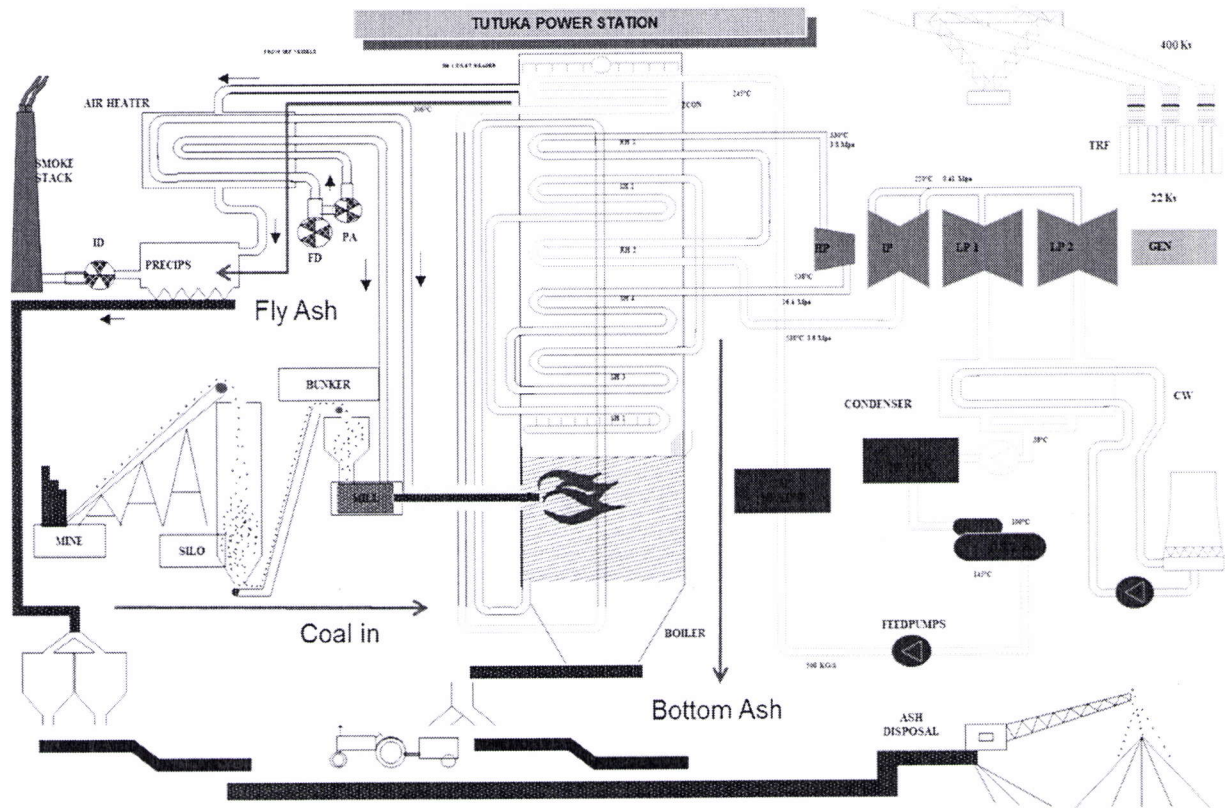
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4.1.1 Identification of Internal and External Issues

4.1.1.1 Process:

Issues relating to the environment were identified based on significant environmental aspects as included in the Aspects and Impacts Register. All risks related to the operations of the power station are deemed to be issues.

External Issues Identified:

- Customer Complaints
- Assumptions
- Political Climate
- Financial Climate
- Community Expectations
- Compliance Obligations
- Changes in Legislation
- Natural Disasters
- Crime Trends

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Internal Issues Identified

- Customer Complaints
- Communication Barriers
- Compliance Obligations
- Resource Constraints
- Financial Constraints
- Inadequate Training and Awareness
- Crime Trends

4.1.2 The Mandate of the Environmental Management Department

The mandate of the Environmental Management Department is to direct employees and contractors in the functional areas to develop, facilitate and monitor the implementation of relevant strategies and policies, providing overall assurance to the General Manager (GM) and the Risk and Assurance Manager that risks and opportunities in these functional areas are being managed.

Within this mandate it is the responsibility of the Environmental Management Department to provide strategic direction (shaping) and assurance (safeguarding) in respect of environmental management and as such is accountable for assuring and ensuring implementation of environmental and interested party requirements and compliance obligations.

4.2 UNDERSTANDING THE NEEDS AND EXPECTATIONS OF INTERESTED PARTIES**4.2.1 General**

The Interested parties/stakeholders for Tutuka PS are identified in the Tutuka PS Operational Plan (14 RISK GEN-017).

4.2.2 Determining the Relevant Interested Parties (IP), and the Relevant Needs and Expectations of Relevant IPs

IP's that are relevant to Tutuka, their needs and expectations, and those needs and expectations which become compliance obligations to Tutuka are included in the Operational Plan and reviewed during Management Review.

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IP's are identified via the following process:

- External contractors/suppliers doing work for Tutuka PS
- Government Institutions issuing Tutuka PS with Authorisations
 - Department of Environmental Affairs (DEA)
 - Department of Water and Sanitation (DWS)
 - Gert Sibande District Municipality (GSDM)
 - Lekwa Local Municipality
 - Mpumalanga Parks and Tourism (MPT)
 - Social Development Initiatives
 - Schools
 - Non-Governmental Organisations
 - Non Profit Organisations etc.
- Surrounding Landowners interacting with Tutuka PS
 - Complaints
 - Information Sharing Sessions e.g. Air Quality Stakeholder Forum
 - Environmental Public Participation Sessions for Tutuka PS Projects
- Community Members
 - Eskom Air Quality Offset projects
 - Morgenzon / Thuthukani - Current
 - Standerton / Sakhile – Possible in future

4.2.3 Determining Compliance Obligations

Compliance obligations (including those from interested and affected parties) are identified in the station's Operational Plan, Integrated Business Process Model and Aspects and Impacts register and links to the Eskom SHE legal register.

4.2.4 Use and Application of the Needs and Expectations of Interested Parties

The needs and expectations of interested parties are factored into the Tutuka Management System; within its compliance obligations (section 3.6.1.3) and when determining which actions to take when addressing its environmental objectives (Operational Plan and Aspects and Impacts Register).

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4.3 DETERMINING THE SCOPE OF THE ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The scope of the Tutuka EMS covers “all the activities, products, services and facilities (see 2.1.2 of this manual) that Tutuka PS control and those that it may influence, that may have a significant impact on the environment”

Within this Tutuka PS EMS scope it is the function of the Risk and Assurance Department in particular to provide strategic direction (a shaping) and an assurance (a safeguarding) influential role in respect of environmental management. Environmental Department is accountable for assuring and ensuring implementation of environmental policies, procedures and is also mandated to provide specialist services/support e.g. managing specific environmental authorisation processes. These activities, products and services are thus considered in scope for the Tutuka PS EMS.

4.4 ENVIRONMENTAL MANAGEMENT SYSTEM

The Tutuka PS EMS is considered an ongoing iterative process that enables the power station to establish, implement maintain and continually improve the Eskom SHEQ Policy and the Tutuka SHEQ Statement of Intent as well as to continually improve the Tutuka PS EMS within the stated scope of the EMS under section 3.3 above, in order to achieve the intent of the Tutuka PS EMS (see section 3.1 above)

5. LEADERSHIP

5.1 LEADERSHIP AND COMMITMENT

The Tutuka PS Senior Leader ship Team (SLT) are formally appointed in writing and has accepted the roles, responsibilities and authorities of the management representatives for the Tutuka PS: EMS.

In terms of this the SLT Team, irrespective of other responsibilities commits to:

- Ensuring that an environmental management system is established implemented and maintained in accordance with the requirements of the ISO 14001 International Standard and in compliance with the Eskom SHEQ policy and the Tutuka PS SHEQ Statement of Intent.
- Reviewing the performance of the environmental management system, including opportunities for improvement.
- Ensuring that resources needed for the EMS are available.
- Ensuring that their employees are trained on the EMS, inclusive of:

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- ISO 14001:2015 Awareness
- SHEQ Policy / Tutuka SHEQ Statement of Intent
- Significant Aspects (e.g. Air / Water / Waste)
- Aspects and Impacts Register
- Training Matrix
- Legal and Other Requirements
- Targets and Objectives

5.2 ENVIRONMENTAL POLICY

Eskom has defined its environmental policy in the Eskom level 1 Safety, Health, Environmental and Quality Policy (EPL 32-727). The policy is applicable to Eskom Holdings SOC and its subsidiaries and therefore to Tutuka PS. The SHEQ Policy is published on Hyperwave and Eskom holdings staff members can access it via the link: http://hyperwave.eskom.co.za/edc_document/32-727 .

Tutuka PS has also developed a SHEQ Statement of Intent which explains how it will further the SHEQ policy requirements within the Power Station.

The Eskom SHEQ Policy and Tutuka SHEQ Statement of Intent is shared on the following platforms

- Monthly Executive SHEQ Meeting
- Monthly Contractor's SHEQ Meeting
- Monthly Departmental SHEQ Meetings
- Site Induction
- Contractor SHEQ File Approval
- Bulletin Boards across the Station

5.3 ORGANISATIONAL ROLES, RESPONSIBILITIES AND AUTHORITIES

Personnel, who manage, perform and verify activities within the EMS, as identified in the Tutuka PS Operational Plan and the Tutuka Integrated Business Process Model, have been formally appointed as such (see 5.1 of this manual).

The roles of top management also include:

- Reporting on the Operation of the EMS

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- Identifying Opportunities for Improvement
- Ensuring that responsibilities and authorities relating to Tutuka's EMS are communicated
- Ensuring that the Requirements as set out in ISO14001:2015 are met

6. PLANNING

6.1 ACTIONS TO ADDRESS RISKS AND OPPORTUNITIES

6.1.1 General

When planning for its EMS Tutuka PS considered external, internal issues, and environmental conditions being affected by or capable of affecting the Tutuka PS EMS to determine its risks and opportunities. Detail of the identified Tutuka PS risks utilising the Eskom IRM methodology, is outlined within the Tutuka PS Operational Plan (14 RISK GEN-017). Actions to address opportunities have also been identified in the Tutuka PS Operational Plan (14 RISK GEN-017).

6.1.2 Environmental Aspects

It is important to ensure that the environmental Aspect & Impact management process is a continuous process and is integrated into all business processes and that aspects & impacts is viewed in its widest context, inclusive of secondary impacts. The environmental Aspects and Impacts Register is reviewed annually or as required after serious incidents or process and/or activity changes. The aspect and impacts register will also be reviewed when there are new aspects introduced or when legislation changes.

The sources of information that used to update and review the aspects and impacts register are as follows:

- SABINET Legal Register
- Eskom Intranet (Legal Register Library).
- Aspects and Impacts Register (ENV F/442).
- Incident Reports.
- Internal and External Audit Reports.
- Baseline Risk Assessment (240-70044602).
- Internal and External reviews.

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- Site Inspection PM (Monthly Planned Maintenance).

The integrated aspects & impacts assessment process includes:

- Identification of aspects & impacts exposure;
- Analyse / Quantify environmental aspects & impacts according to a standardized approach. (Environmental Aspects, Impacts, Objectives and Plan Procedure (240-91213801).
- Rank and prioritize environmental aspects & impacts;
- Develop management strategies for high/critical environmental impacts and identification of control measures.

Aspect & impact identification is a continuous process and all employees/contractors are aware and conduct informal aspects & impacts assessments on a day-to-day basis to ensure environmental aspects & impacts are proactively identified.

The identification of aspects & impacts exposure takes the following into account:

- Routine and non-routine activities;
- Activities of all persons having access to the workplace (including contractors and visitors);
- Human behaviour, capabilities and other human factors;
- Aspects & impacts originating outside the workplace capable of adversely affecting the environment under the control Tutuka Power Station within the workplace;
- Aspects & impacts created in the vicinity of the workplace by work-related activities under the control of the organization;
- Infrastructure, equipment and materials at the workplace, whether provided by the organization or others;
- Changes or proposed changes in the organization, its activities, or materials;
- Modifications to the Environmental Management system, including temporary changes, and their impacts on operations, processes and activities;
- Any applicable legal obligations relating to aspect & impact assessment and implementation of necessary controls.
- The design of work areas, processes, installations, machinery/equipment, operating procedures and work organization, including adaptation to human capabilities.
- Change management and changes to the Environmental Management System.

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- The aspect giving origin to the impact is identified and documented in the Environmental Aspect Register.
- Condition of aspects & impacts are identified and documented as normal, abnormal or emergency conditions
- Analyse / Quantify environmental aspects & impacts according to a standardized approach

Management strategies are developed for high/critical environmental aspects & impacts and control measures are identified, documented and implemented;

Non-significant, low and medium environmental aspects & impacts are controlled during day to day activities.

When determining new controls, or considering changes to existing controls, consideration is given to reducing the environmental aspects & impacts according to the following hierarchy:

- Elimination
- Substitution
- Engineering controls
- Monitoring
- Signage/warnings and/or administrative controls
- Applicable legislation

The identified environmental aspects & impacts and controls are taken into account when establishing, implementing and maintaining the Environmental Management System (EMS).

Environmental Aspects associated with environmental risks relating to abnormal and emergency scenarios to be included on the Aspects and Impacts Register: such risks include:

- Natural floods
- Veld fires
- Lightings
- Landslide due to steep unstable landscapes
- Hail storms
- Building collapse
- Dust explosions

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- Coal Silo failures and cooling tower structural failures.

Environmental Aspects associated with environmental risks relating to Climate Change to be included on the Aspects and Impacts Register: such risks include:

- Increased rainfall
- Increased low temperatures
- Increased high temperatures
- Drought
- Extreme weather conditions in general (e.g. Tornadoes and tropical cyclones)

The Environmental Aspect and Impacts Register is available on the Intranet and Tutuka Power Station G-drive/Tutuka/Environment/ISO14001/Aspects and Impacts - employees that do not have access to the intranet or computer facilities can access through supervisors line managers or environmental office.

Employees, contractors and visitors are made aware of the environmental aspects & impacts that they will be exposed to or may be caused by their products, services and activities.

Environmental aspects & impacts are proactively identified and changes to the Environmental Aspect and Impacts Register is made as and when required. Line managers are to communicate required changes to the environmental department.

6.1.3 Compliance Obligations

6.1.3.1 Identification of Compliance Obligations

Compliance obligations that are applicable to the aspects and impacts have been identified and are listed in the Aspects and Impacts Register. A broader listing of these aspects and its compliance obligations can be found in the SHE legal registers e.g. the Eskom SHE legal register.

Changes in compliance obligations are identified by continual scanning of the environment. When new environmental projects are executed, they bring with new compliance obligations which are then captured on the Aspects and Impacts Register.

When new legislation is introduced / promulgated updates are sent to all the stations by the Eskom Sustainability Environmental Management Department.

Developments and information updates are circulated to staff as and when required.

Applicable compliance training is conducted for aspects with high significance ratings e.g. Water / Air / Land.

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Corrective actions are identified and implemented where non-compliance to applicable legal and other requirements are identified.

Evaluation of compliance is conducted as per Tutuka Power Station Internal Audit procedure (14 SHEQ PC-005).

Eskom Legal Department is consulted in instances where Tutuka PS requires assistance to address high risk Legal Compliance issues.

6.1.3.2 Access to All Relevant Environmental Legislation

Access to all South African legislation (national, provincial and local bylaws) is available through the contract Eskom has with Sabinet:

<http://intranet.eskom.co.za/EskomBusinesses/OtherSites/Pages/Le.aspx>

Or Directly:

<http://discover.sabinet.co.za/>

Access to Other requirements in terms of the above can be found on/in the Eskom Intranet, the Eskom Information Centre, Eskom Document Centre and the Hyperwave.

In cases where Tutuka PS employees and contractors are unsure of how to access or interpret legal and other requirements, the Environmental Department is consulted.

6.1.3.3 Other Requirements:

Other requirements (e.g. SANS codes) to which the organization subscribes as well as those referenced by applicable legal requirements, are available on the Eskom Intranet, the Eskom Information Centre, Eskom Document Centre and the Hyperwave.

Updates to corporate Environmental and other requirements are communicated via e-mail from Group Communications and in periodic Environmental meetings attended by designated Environmental Representatives.

Identified other requirements applicable to Tutuka Power Station's Environmental aspects & impacts, as denoted in the Sabinet Legal Register, constitutes the site specific Legal Register.

Where applicable to Tutuka Power Station's Environmental aspects & impacts, performance indicators as defined in other requirements are incorporated into the Environmental Management System.

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6.1.4 Planning Action

Tutuka PS has identified all significant aspects in the Aspects and Impacts Register which are being addressed under targets and objectives and actions are tracked and monitored via EMP's. These aspects can also be regarded as compliance obligations and risks and opportunities.

This planning enables the power station to achieve the intended outcomes of the environmental management system implemented to prevent or reduce undesired effect and to achieve continual improvement.

6.2 ENVIRONMENTAL OBJECTIVES AND PLANNING TO ACHIEVE THEM

Environmental objectives have been established at the strategic level, tactical and the operational level for Tutuka PS EMS consistent with the SHEQ policy commitments and to achieve the intent of the Tutuka PS EMS.

6.2.1 Environmental Objectives and Targets

Objectives and targets have been established for relevant functions and levels within Tutuka Power Station to action, manage and measure, where practicable, the effective co-operation between all relevant activities.

This includes significant (high / critical / recurring) environmental aspects & impacts to ensure the successful establishment, implementation and maintenance of EMS striving for continual improvement.

Environmental objectives and targets are captured on the Tutuka Aspects and Impacts Register as well as the Tutuka PS Operational Plan.

Main objectives and targets are monitored via the Station Environmental Contract, which is monitored on a monthly basis and the targets and objectives are reviewed annually.

When setting Objectives and Targets, legal and other requirements to which Tutuka subscribes, technological options, financial, operational and business requirements as well as the views of interested parties are considered.

6.2.2 Planning Actions to Achieve Environmental Objectives

Planning actions to achieve objectives and targets are captured on the Aspects and Impacts Register under the EMP's.

Environmental objectives are communicated to the persons working under the power station's control who have the ability to influence the achievement of environmental objectives.

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Where such a control is identified the persons are committed in terms of their performance contract to achieve the relevant and applicable actions to achieve the objectives.

6.2.2.1 Performance Indicators

Performance indicators are selected to evaluate the achievement of measureable environmental objectives.

KPI's are set for aspects that have significant impacts on the environment according to the significance rating of the impact in the aspect register. KPI's are monitored, measured and reported by the Environmental Department to the Risk and Assurance Manager and Generation Environmental Management. Reporting is done on an Environmental Performance Contract and reported monthly;

Non-conformances identified during internal and external audits, reviews, assessments and inspections are recorded on the SAP Quality Issue Management (QIM) systems and managed as per the Incident Management, Corrective and Preventative Action Procedure (Ref no: 00607);

Responsibilities for addressing SAP QIM and SAP EHS actions are allocated at bi-weekly Production Meetings;

The progress with actions from audits is included in Management Review meetings.

7. SUPPORT

7.1 RESOURCES

The Tutuka Power Station General Manager is ultimately responsible for the EMS and for providing resources (human, specialized skills, organizational infrastructure, technology, and financial) required for the establishment, implementation, maintenance and continuous improvement of the EMS.

Where responsibility is assigned to any person working for or on behalf of Tutuka Power Station, that person is accountable to ensure that the responsibility is fulfilled, and they adhered to the SHEQ Policy and EMS;

All departments, functions and employees working for or on behalf of Tutuka Power Station are responsible for implementing, maintaining and continuously improving the EMS with regards to activities over which they have control, including adherence to applicable Environmental requirements as well as the SHEQ Policy and the Tutuka SHEQ Statement of Intent;

Documented roles, responsibilities and/or authorities are communicated to relevant personnel by the Group/Line Managers and/or Environmental Department as appropriate;

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All persons working for or on behalf of Tutuka Power Station with management responsibility shall demonstrate their commitment to continual improvement of the EMS by identifying improvement opportunities where appropriate and applicable through:

- Internal audits;
- Data integrity audits;
- Communicating aspect and impacts to the Environmental Department to ensure that the aspects and impacts register is updated;
- Communicating environmental legal updates and changes to the environmental department;
- Reviewing environmental procedures at stipulated frequencies;
- Attending relevant meetings to address and report on environmental issues.

Tutuka PS management ensures the availability of resources essential to establish, implement, maintain and improve the environmental management system by means of management system appointments, training and awareness.

Roles, responsibilities and authorities have been defined, documented (job profile, performance compact and power station operational plan) and communicated appropriately in order to facilitate effective management of the significant environmental aspects of its activities, products and services and the delivery of its products.

7.2 COMPETENCE

Tutuka PS management ensures employees performing activities for it or on its behalf is (are) competent on the basis of appropriate education, training or experience as contained in the Tutuka PS Training Needs Analysis and Matrix and retain associated records on the LSO system . These are available in the employees files held within the HR Shared Services and with the EAP Department. Gaps in competencies in skills are addressed through individual development plans. This is done by following the general Eskom Human Resource policies and procedures.

Environmental induction for all employees including contractors is conducted to ensure that all are made aware of the:

- Importance of conformity with the environmental policy and procedures and with the requirements of the environmental management system,
- Significant environmental aspects and related actual or potential impacts associated with their work,

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- Environmental benefits of improved personal performance,
- Roles and responsibilities in achieving conformity with the requirements of the environmental management system, and
- Potential consequences of departure from specified procedures.

Refresher awareness sessions are held as required.

7.3 AWARENESS

Awareness is conducted to persons doing work under the control of Tutuka PS as per point 5.1(Leadership).

Awareness is conducted via e.g.:

- Toolbox Talks
- Group Communications (e-mail)
- Posters
- Classroom sessions
- Work Stoppages

7.4 COMMUNICATION

7.4.1 General

Tutuka PS has established, implemented and maintain the processes needed for internal and external communication relevant to the environmental management system.

Environmental communication activities are undertaken in consultation with the Tutuka Communication Department and the Eskom Media Desk and Eskom spokesperson as required.

Tutuka PS responds to relevant communications on its environmental management system and retains documented information as evidence of its communications, as appropriate.

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7.4.2 Internal Communication

The following is communicated internally:

WHAT	WHEN	WITH WHOM	HOW
EMS System	Annually	All	General Awareness (Internal Communication / Classroom Sessions)
SHEQ Policy & Statement of Intent	Monthly	All	Executive SHEQ Meeting Contractor's SHEQ Meeting Departmental SHEQ Meetings
Significant Environmental Aspects	Annually	All	General Awareness (Internal Communication / Classroom Sessions)
Objectives & Targets	Monthly	All	Mass Brief SLT / BRM Executive SHEQ Meeting Production Meeting
Applicable Legal and Other Requirements	Monthly	All	Internal Communication
	Annually	Top Management	Management Review
Station- and Environmental Performance	Monthly	All	Mass Brief SLT / BRM Executive SHEQ Meeting Production Meeting
Major Environmental Incidents	When it Occurs	All	Flash Reports Production Meeting SLT / BRM
PED Weather Report	Daily	All	General Communication

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7.4.3 External Communication

The following is communicated externally:

WHAT	WHEN	WITH WHOM	HOW
Significant Environmental Aspects	Annually	Public	Eskom Integrated Report
Eskom SHEQ Policy	Always	Public	Eskom Internet
Specific Environmental Topics / Issues	As & When Required	External Parties	Eskom spokesperson and Eskom Media Desk.
Feedback w.r.t. Complaints Received	As & When Required	Complainants	Verbal (telephonic) / E-mail
Compliance Obligations	As & When Required	Authorities	Verbal (telephonic) / E-mail

*Note: All formal reports to be in PDF format and protected.

7.5 DOCUMENTED INFORMATION

7.5.1 General

The Environmental Management Manual describes Tutuka Power Station's general organisation as well as the means and resources for implementing and maintaining the EMS.

Elements of overlapping existing Site Management System documentation were taken into consideration when compiling the EMS documentation.

The SHEQ Policy Statement of Intent describes the general intention of Tutuka Power Station with respect to the environment. It is distributed to all Tutuka employees and contractors are distributed to interested parties upon request.

Tutuka PS EMS documentation includes the following:

- Documented information as required by ISO 14001
- Documents, including records and registers, determined by Tutuka PS to be necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental aspects

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- This EMS manual which contains a description of the scope of the EMS, the main elements of the environmental management system and their interaction, and reference to related documented information.

Documented information of external origin determined by the Environmental Department to be necessary for the planning and operation of the environmental management system is identified, as appropriate and controlled.

7.5.2 Creating and Updating

The Tutuka Documentation Management System (TDS) ensures that documents are created, reviewed, revised, approved, controlled, legible, dated, identifiable and easily accessible.

7.5.3 Control of Documented Information

Documents relevant to the EMS are managed via the Tutuka Documentation Management Process (13GAPRMDC/D1-001).

8. OPERATION

8.1 OPERATIONAL PLANNING AND CONTROL

8.1.1 Operational Control Methods, Systems, Processes and Equipment

For every significant (high and critical risk) Environmental aspect & impact, the Environmental Officers and Group/Line Managers identify operations and activities that are associated with the relevant Environmental aspect & impact; these operations and activities, at a minimum, are controlled through operational control methods, systems, processes and/or equipment where the absence of control measures can lead to deviation from the SHEQ Policy, objectives and targets.

Operational controls are methods, systems, processes and equipment that safeguard employees and the environment, consistent with the SHEQ Policy and objectives and targets. These can be special containers, tanks or packaging, protection, containment or isolation arrangements, alarms and automatic shutdown or shutoff mechanisms, treatment processes, communication requirements and equipment, warning signs, instructions and procedures, training programs, etc.

Group/Line Managers responsible for operations and activities associated with significant (high and critical risk) Environmental aspects & impacts shall evaluate the need for implementation of relevant operational controls.

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Cognizance is taken of the following, when evaluating the need for operational controls:

- Risk characteristic of Environmental aspect & impact
- Legal and regulatory requirements
- History of related incidents
- Relevance to the SHEQ Policy , objectives and targets
- Available equipment and technology and its effectiveness, cost, impact on productivity and other business considerations.

Implementation of new operational controls can be planned and carried out in the framework of management programmes for reaching objectives and targets, corrective or preventive actions and/or Standard Operating Procedures (SOPs).

8.1.2 Standard Operating Procedures (SOP's)

Standard Operating Procedures (SOP) are required where their absence could lead to deviation from the SHEQ Policy, objectives and targets or could cause a significant (high and critical risk) Environmental impact. *Cognisance of the following is taken when evaluating the need for a Standard Operating Procedures (SOP):*

- Risk characteristic of Environmental aspect & impact.
- The need to document and communicate specific operational criteria, e.g. process parameters.
- Qualifications and training of personnel carrying out and/or managing the operation or activity.
- History of related performance and incidents.

SOP's stipulate methods and operational criteria that minimises the use of materials, energy and other natural resources, reduce generation of wastes and emissions, prevent pollution, decrease the aspects & impacts of uncontrolled releases or other incidents, promote safety and otherwise ensure that operations and activities are carried out under defined and controlled conditions.

Where applicable and appropriate, SOP's are also developed for monitoring and verification activities, including instructions for the use and calibration of measuring and test equipment, for sampling methods and for conducting inspections and tests.

SOP's are normally issued internally by the Group/Line Managers and Environmental Officers, and reviewed and approved for use by the Group/Line Managers, Environmental Officers and Risk & Assurance Manager.

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Relevant personnel are trained, formally or informally on the implementation of SOP's related to their work activities.

8.1.3 Products and Services Used By Tutuka Power Station

Tutuka Power Station communicates Environmental requirements related to identify significant (high and critical risk) Environmental aspects & impacts to its suppliers and subcontractors and monitors their conformance with the requirements. All the aspects and impacts are captured on the aspects and impacts register.

The following categories of purchased products and subcontracts are controlled by the Environmental Management System:

- Hazardous materials, substances and chemicals, equipment for processing, storing and handling of hazardous wastes, hazardous waste haulers, treatment and disposal facilities.
- Personal protective equipment and equipment used in emergency response. Measuring and test equipment intended for monitoring performance and regulatory compliance (including calibration).
- Subcontractors performing services at the work environment, which bring in hazardous materials or chemicals, or generate hazardous waste.

Additional products and services that may be identified by the Heads of Department/Function/Section, Environmental Officer and Risk & Assurance Manager because of their association with significant (high and critical risk) Environmental aspects & impacts , objectives and targets.

Purchasing is controlled by specifying and communicating Environmental requirements and by monitoring of supplier performance.

Environmental requirements defined by the Group/Line Managers, Environmental Officers and Risk & Assurance Manager are included in purchase orders or contracts.

Any incoming product or service nonconformity with regard to Environmental requirements is reported to the Environmental Officers, who evaluates and investigates the problem.

The Group/Line Managers contact the supplier or subcontractor and, when appropriate, issues a corrective action request.

The Group/Line Managers Environmental Officers and Risk & Assurance Manager have the authority to prohibit purchases from suppliers or subcontractors, who do not meet Environmental requirements, and to remove or issue a PIR to contractors who violate Environmental Management System policies and procedures/standards.

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8.1.4 Contractors and Visitors to Premises

No unaccompanied contractors and visitors to premises are allowed, unless contractors and visitors received induction/awareness training.

8.2 EMERGENCY PREPAREDNESS AND RESPONSE

Incidents arising from abnormal operating conditions as well as potential environmental accidents and emergency situations have been identified and are included in the Tutuka Power Station Emergency Preparedness Procedure, to ensure appropriate response in these situations.

This system procedure is applicable to all activities and areas that may cause, or be exposed to, uncontrolled releases of hazardous substances, fires, explosions, contamination and other such environmental emergencies caused by incidents, accidents, emergency situations or natural disasters (Emergency Preparedness Procedure (14EPPEARL-001)).

9. PERFORMANCE EVALUATION

9.1 MONITORING, MEASUREMENT, ANALYSIS AND EVALUATION

9.1.1 General

KPI's are set for aspects that have significant impacts on the environment according to the significance rating of the impact in the aspect register. KPI's are monitored, measured and reported by the Environmental Department to the Risk and Assurance Manager and Generation Environmental Management. Reporting is done on an Environmental Performance Contract and reported month;

Non-conformances identified during internal and external audits, reviews, assessments and inspections are recorded on the SAP Quality Issue Management (QIM) and Performance Improvement Report (PIR) systems and managed as per the Incident Management, Corrective and Preventative Action Procedure (14RISK IM PC-019).

Responsibilities for addressing SAP QIM actions are allocated at bi-weekly Production Meetings;

The progress with actions from audits is included in Management Review meetings

Data integrity reviews are conducted by the Eskom Generation Sustainability Division bi-annually and periodic internal reviews are also conducted w.r.t. waste management and authorisations;

All the monitoring equipment's/instruments are calibrated as scheduled and the records are kept by the responsible person/s.

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9.1.1.1 Water Monitoring

Surface- and groundwater monitoring is conducted in compliance with the Tutuka Water Use and waste License requirements and reports are kept at the Environmental Office and on the G Drive/Group/Risk and Assurance/Environment;

The Chemical Services Department submits the following to the Environmental Department:

- Daily water report (inclusive of all dam levels)
- Monthly sewage discharge parameters
- Monthly raw water report which informs the Station Environmental Performance Contract;

Additional water quality assessments are done as and when required;

Internal and external water audits are conducted as per legal and other requirements.

9.1.1.2 Air Quality Monitoring

Emissions (PM / CO₂ / SO_x / NO_x / O₂) are monitored through the Tutuka Automated Monitoring System (PGIM) - PGIM is a live system from which data and reports are drawn as and when required;

Fugitive dust monitoring is conducted on a monthly basis by an external service provider and reports are kept at the Environmental Office and on the G Drive/Group/Risk and Assurance/Environment;

Additional air quality assessments are done as and when required;

Internal and external air quality audits are conducted as per legal and other requirements.

9.1.1.3 Environmental Management Programmes (EMPs)

Specific Environmental Management Programmes are established to achieve objectives and targets and ensure legal compliance. Progress on EMPs is discussed at Management and Production meetings.

EMP's are accessible on the Aspects and Impacts register, saved on the Tutuka Power Station G-drive/Group/Risk and Assurance/Environment - sheet named EMP's.

EMPs include:

- Associated Objective and Target
- Reference to relevant element included in the SHEQ Policy
- ISO 14001 reference
- A description of the actions to be taken to achieve the associated objectives and targets

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- Responsibilities for each action
- Target dates for the achievement of each action
- Actual completion dates for each action
- Comments section

The Environmental Department is responsible for updating the EMP's and tracking and monitoring compliance to EMPs

The Environmental Department evaluates information and data generated by the monitoring of high/critical environmental aspects & impacts annually and presents the results at the Management Review meeting;

The evaluation includes such elements as trends in performance related to high/critical environmental aspects & impacts, corrective actions and management programs initiated in response to decreasing performance, results of internal and external audits, and recommendations for new objectives and targets, or changes in the EMS to improve the control and/or performance with respect to high/critical environmental aspects & impacts.

9.1.2 Evaluation of Compliance

Compliance with applicable legal and other requirements to which Tutuka Power Station subscribes are either done formally (e.g. legal compliance audits/ assessments/ reviews) or informally (e.g. inspections).

Evaluation of compliance with applicable environmental legal and other requirements to which Tutuka Power Station subscribes, as identified is done annually during the Management Review (refer to 9.3) or as and when legislation changes or when new aspects are introduced. Corrective actions are identified and implemented where non-compliance to applicable legal and other requirements are identified.

Evaluation of compliance is conducted as per Tutuka Power Station Internal Audit procedure with reference number 14 SHEQ PC-005. This procedure outlines the evaluation of compliance by means of auditing, assessments, reviews or inspections.

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9.2 INTERNAL AUDIT

9.2.1 General

EMS Audits are conducted as per the Tutuka Audit Procedure (14SHEQ PC-005).

9.2.2 Internal Audit programme

The Internal Audit Program is drafted and managed by the Business Assurance Department as per the Tutuka Audit Procedure (14SHEQ PC-005)

9.3 MANAGEMENT REVIEW

The Environmental Management System will be reviewed annually (or as and when required after unplanned/emergency situations) by the Power Station General Manager and the Senior Leadership Team.

Inputs will include:

- Status of actions from previous management reviews;
- Changes in:
 - External and Internal issues that are relevant to the environmental management system
 - The needs and expectations of interested parties including compliance obligations
 - Significant Impacts
 - Risks and Opportunities
- The extent to which environmental obligations have been met
- Information on Environmental Performance, including trends in:
 - Non-conformities and corrective actions
 - Monitoring and Measurement Results
 - Fulfilment of Compliance Obligations
 - Audit Results
- Adequacy of Resources
- Relevant Communications from Interested Parties including Complaints
- Opportunities for Continual Improvement

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Outputs shall include:

- Conclusions on the continuing suitability, adequacy and effectiveness of the EMS
- Decisions relating to continual improvement opportunities
- Decisions related to need for change to the EMS, including resources
- Actions (if needed) when environmental objectives have not been achieved
- Opportunities to improve integration of the EMS with other business processes
- Implications for the strategic direction of the organisation

10. IMPROVEMENT

10.1 GENERAL

Opportunities for improvement are identified as a result of:

- Monitoring, measurement, analysis and evaluation related to the Tutuka PS environmental performance and the fulfilment of compliance obligations,
- Audits of the Tutuka PS environmental management system and
- Tutuka PS management reviews.

In order to achieve the intended outcomes of the EMS actions necessary to address identified opportunities for improvement has been taken, including controlling and correcting nonconformity, and enhancing its environmental performance through continually evaluating and improving the suitability, adequacy and effectiveness of the Tutuka PS EMS.

10.2 NONCONFORMITY AND CORRECTIVE ACTION

Nonconformity and corrective action is managed as per the Tutuka PS Incident Management, Corrective and Preventive Action Procedure (14RISK IM PC-019)

When data or other information indicates that nonconformities exist or that there is an increased risk, the Environmental Department initiates corrective or preventive action by way of raising and event on the SAP EHS System;

In cases when the required correction cannot be achieved with simple measures and within a short period of time, the Environmental Department proposes specific objectives and targets to improve performance, and establish appropriate management programs to achieve these objectives.

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10.3 CONTINUAL IMPROVEMENT

10.3.1 Opportunities for Improvement

An effective environmental management system is an interactive set of processes to enhance environmental performance and to achieve the intent of the EMS. Tutuka PS continuously seeks opportunities for improving its activities, products and services by:

- Actively engaging with its stakeholders through self-assessment of its processes,
- Governance forums such as Water- and Emissions Task Teams
- Responding to queries from its interested parties through surveys and other approved feedback mechanisms.
- Engagement with relevant parties to establish what deficiencies exist and why it exists by analysing the root causes of its environmental management system nonconformities.
- Securing senior management involvement and steering of the environmental management system and its review.

10.3.2 Implementation of Continual Improvement

The actions for improvement are identified and planned and tracked in the monthly Senior Leadership Team (SLT) and Business Review (BRM) Meetings as well as during the Management Review Meeting.

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11. AUTHORIZATION

This document has been seen and accepted by:

Name	Designation
Jabulane Mavimbela	General Manager
Claude Naicker	Risk and Assurance Manager
Patrick Nkosi	Operating Manager
Mehendra Maharaj	Engineering Manager
Karlheinz von Bentheim	Maintenance Manager
Evelinah Hleza	Production Manager (Units 1 - 3)
Seipati Lehoko	Production Manager (Units 4 - 6)
Chrissy Msibi	Business Services Manager
Ditsoanelo Khoza	Production Manager (Outside Plant)
Oupesh Motlhabane	Programme Manager (Business Partner) (Acting)
Dumisani Motha	Outage Manager (Business Partner)
Michelle Geyser	Human Resources Manager (Business Partner)
Babalelo Razwiedani	Finance Manager (Acting) (Business Partner)
Simphiwe Dlodla	Procurement Manager (Business Partner)
Qinisani Nkwanyana	Materials Management Manager (Business Partner)

12. REVISIONS

Date	Rev.	Compiler	Remarks
January 2018	11	I Coop	Revised to Conform to ISO 14001:2015 Requirements – changes made in all sections
February 2017	10	W. Mogwase	Additional scope added
February 2015	9	S. Sibiya.	Document was due for revision. Changes were made in the following points: 1; 2; 2.2.1; 2.2.2; 2.3; 2.5; 2.6; 2.7& 3.
February 2012	8	W. Mogwase.	Document revised major changes made in the content.
May 2011	7	N. Nongauza.	Document revised minor changes made in the document.
August 2009	6	N. Nongauza.	Document was due for revision.

13. DEVELOPMENT TEAM

The following people were involved in the development of this document:

- I. Coop.
- W. Mogwase .
- S. Sibiya.
- D. Govindan.

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